
A Second Look at the Cold Food Chain

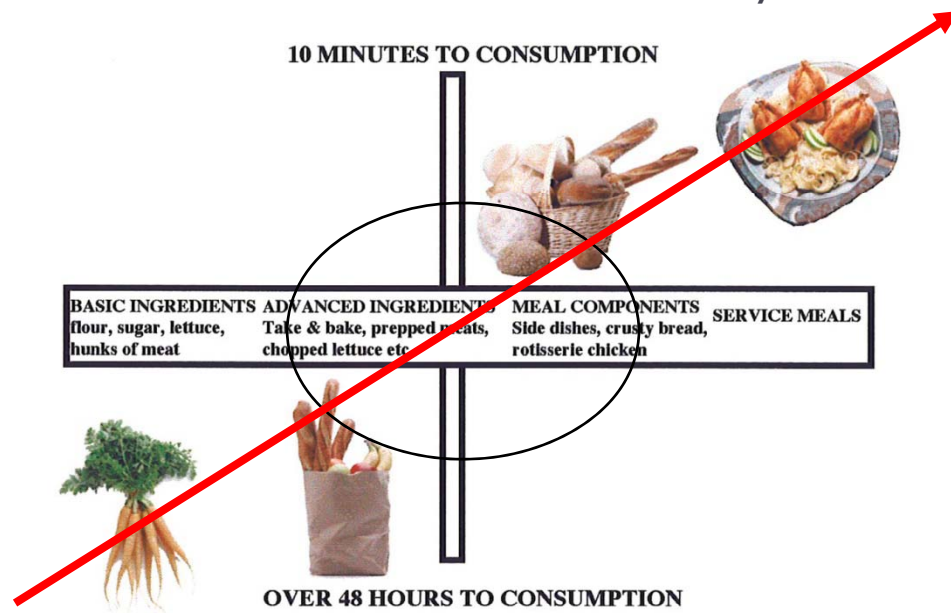
... and its implications

February 12, 2008



Why a Second Look?

- ▶ Two basic and lasting consumer trends in the food industry are fueling a renewed interest in refrigerated foods and the cold food chain
 - ▶ An expectation of freshness
 - ▶ Fresh ingredients, freshly prepared, preservative free - even organic
 - ▶ Refrigerated not frozen
 - ▶ The demand for convenience - ready now!



- ▶ The meal decision is being taken closer to the time of consumption
- ▶ Customers are moving from bottom left to top right
- ▶ The coming generation does not cook, they assemble
- ▶ The space in the middle is being competed for by retail and food-service



The Implications

- ▶ The consequences on manufacturing, logistics and retail operations are far reaching but focus on:
 - ▶ Maintaining and shortening the cold food chain from farm to table to preserve quality
 - ▶ Food safety
 - ▶ A different economic model
- ▶ The cold chain is the means successively employed to ensure the early and permanent refrigerated preservation of perishable foodstuffs from the production to consumption
- ▶ If a break in the chain occurs the consequences may take various forms from early wilting of food stuffs of plant origin to the development of spoilage flora, or even worse pathogenic flora or toxins that may cause food borne diseases



The UK Model

- ▶ The Chilled Convenience Food (CCF) market in the UK is a \$6 billion market still growing at double-digit rates.
 - ▶ Market created by Marks and Spencer - now a destination category among all competitors.
 - ▶ Mid to premium price positioning: 1.5 to 2.0 x RSP of frozen.
 - ▶ Products typically based on fresh ingredients with a short shelf life (7 days average).
- ▶ Margins/branded vs private label
 - ▶ Private label represents 90+% of category
 - ▶ Retail - “amongst the highest profit per linear foot of any category”
 - ▶ Processing – “low margin but low capital intensity”

UK CCF processors performance vs market average	EBIT %	ROCE %
CCF average	6.9%	16.9%
UK Food & Drink sector average	9%	22.5%



Food Safety



The defined purpose of a recall is to protect public health, and recalls are classified by level of threat and Class I is the most serious:

Class I Recall —

The product poses a reasonable probability of serious adverse health consequences or death. Example: E. coli in ground beef.

Class II Recall —

The product may cause temporary or medically reversible adverse health consequences, or the probability of serious adverse health consequences is remote. Example: undeclared milk allergens in soup.

Class III Recall —

The product is not likely to cause adverse health consequences. Example: Soda labeled “caffeine-free” is found to contain caffeine.

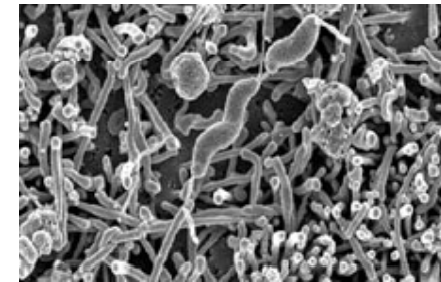
FDA Recall Statistics —

FDA recall actions also extend to medical products and drugs. The FDA notes that “In 2005, more than 5,300 products regulated by the FDA were recalled. Of these products, 466 were Class I; 3,781 were Class II; and 1,091 were Class III. Most Class I recalls in 2005 were in the food category.”

Two types that affect Food Safety:

Pathogenic bacteria – can't see, can't smell, can't taste

Examples: E. coli, Salmonella, B. cereus, Campylobacter, Clostridium botulinum, and Listeria monocytogenes.



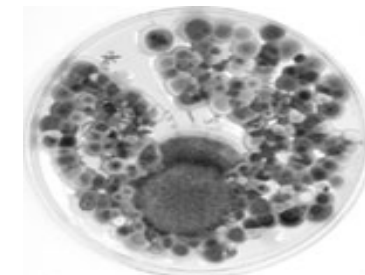
Campylobacter

Mainly controlled by good personal hygiene, proper time and temperature control, avoiding cross contamination, and proper cleaning and sanitizing of food contact surfaces.

Spoilage Organisms – looks bad, smells bad, tastes bad

Examples: Yeast, mold, and non-pathogenic bacteria

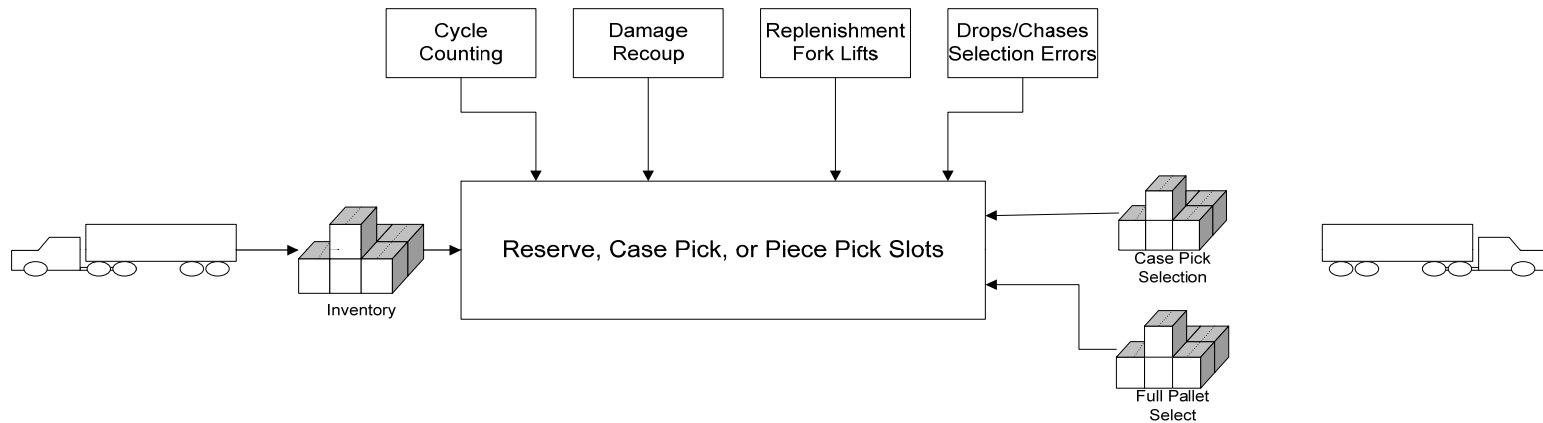
Mainly controlled by time and temperature.



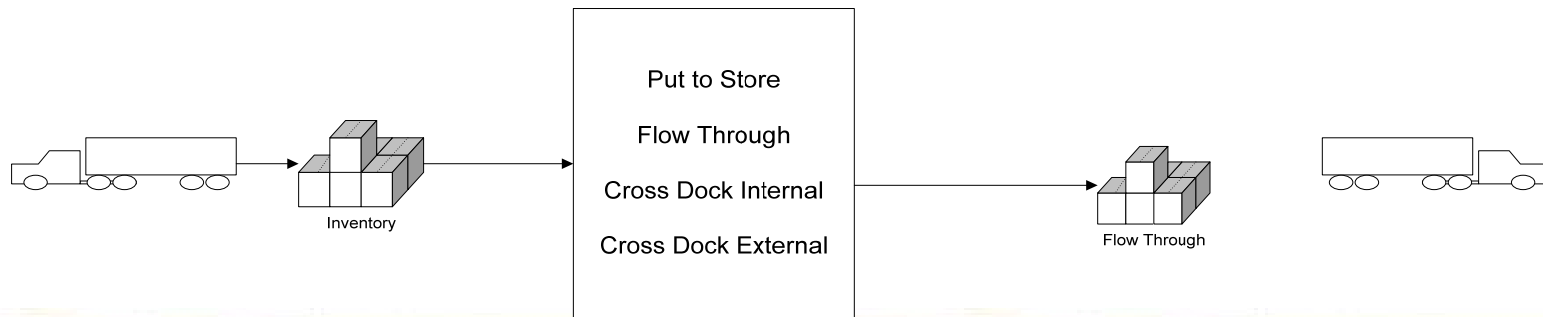
Mold

Comparing traditional material flow capabilities to 'new' material flow capabilities...

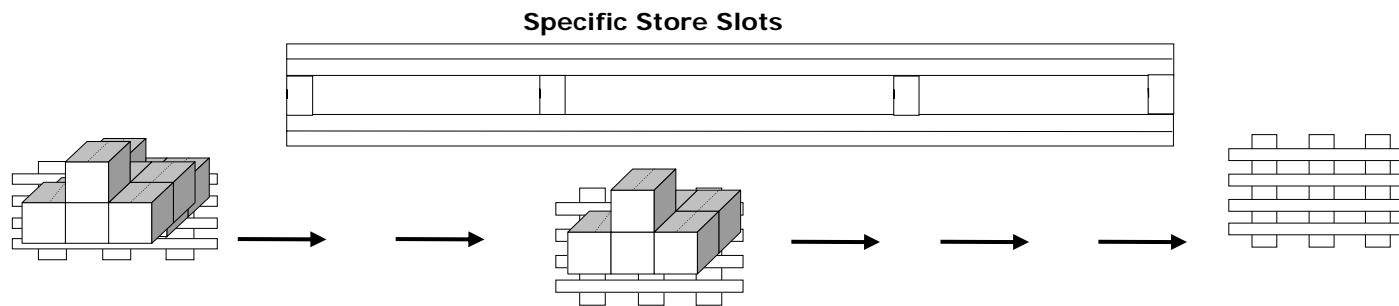
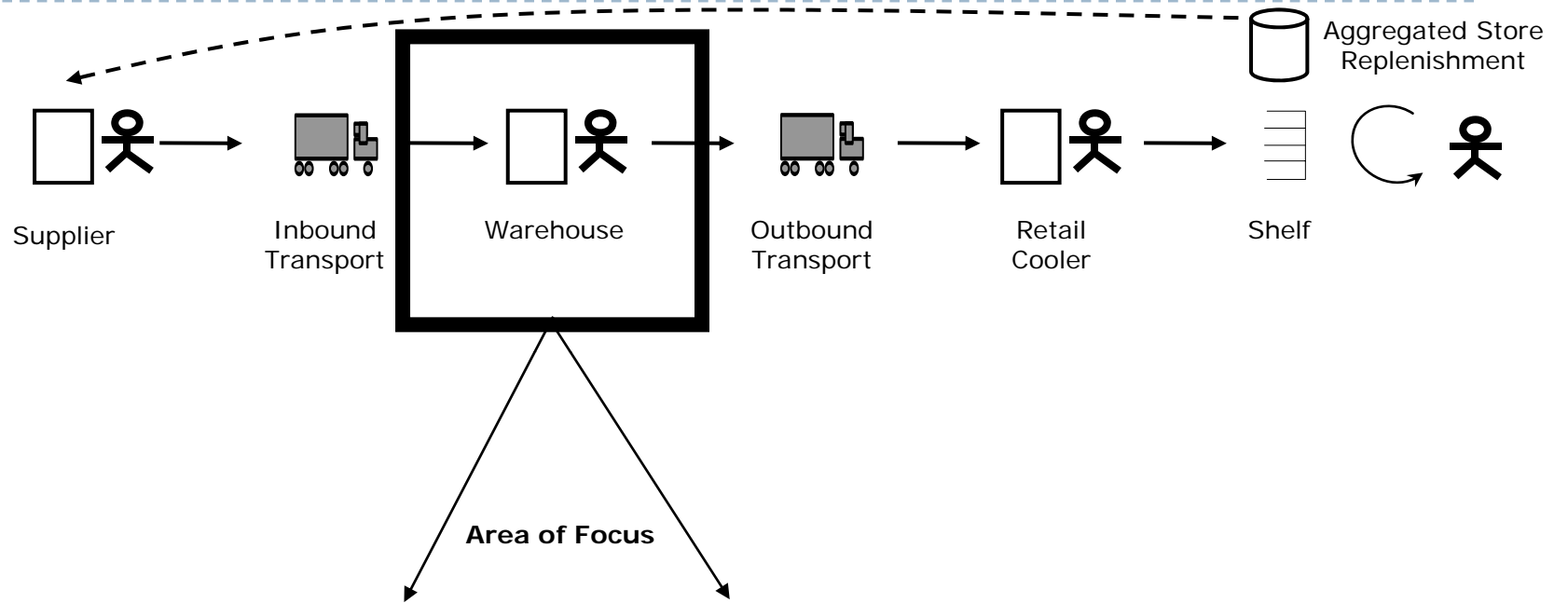
Traditional Product Flow



Additional Product Flow



'Put to Store' Flow Design



How did We Better Control Time and Temperature?

Changes to the traditional Supply Chain can create positive impact to 'Food Safety':

- Compressing time from manufacturing to customer demand
- Eliminating overstocked inventory
- Handling within warehousing reduced
- Utilizing 'Advance Ship Notices' to read pallet identifications to improve tracking capabilities

Operations

- Operational Processes
 - ASDA Model
 - Less Than Truckload
- Technology
 - Electronic product code
 - Refrigerated trailer



Moving it Faster and Safer through the “Cold Chain”



Imagine a World Where.....

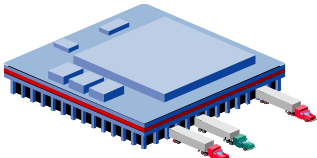
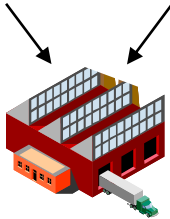
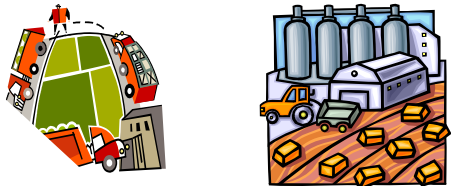
You are confident that the fruits, vegetables, meats, and dairy products – are always presented to you at their highest quality



International Model



Domestic Farms and Suppliers



International Farms

Port

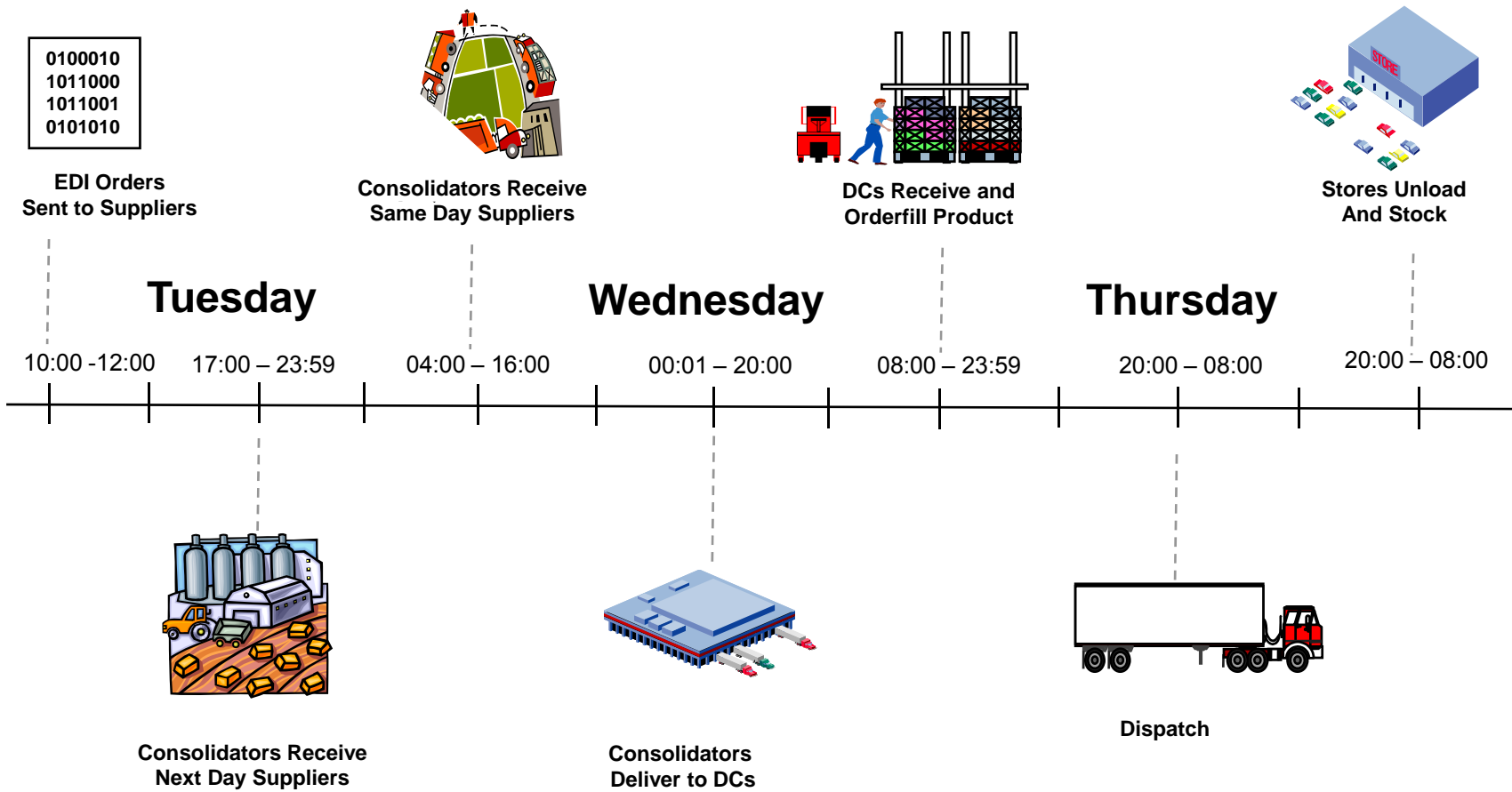
Consolidator

Distribution Center

Stores



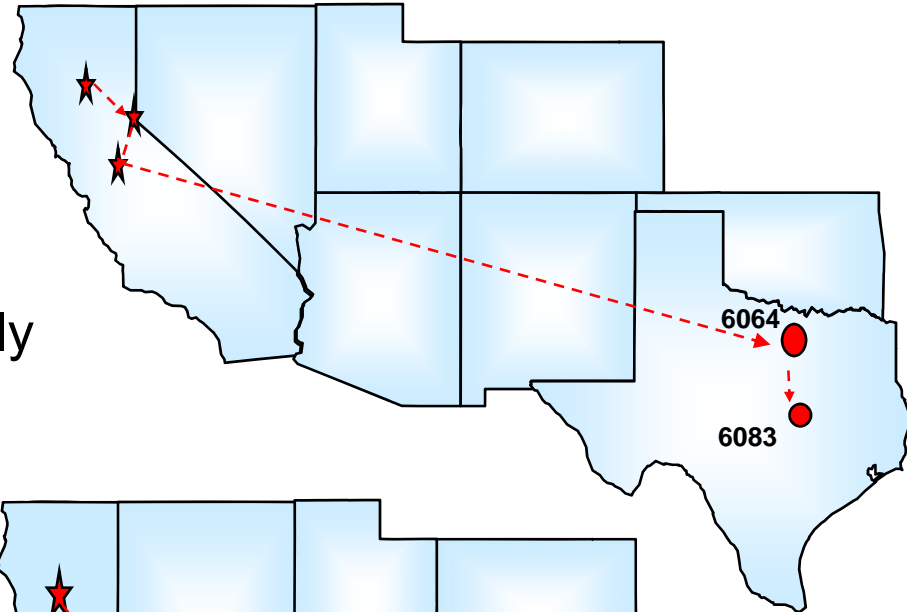
International Model



Consolidation of LTL Pickups

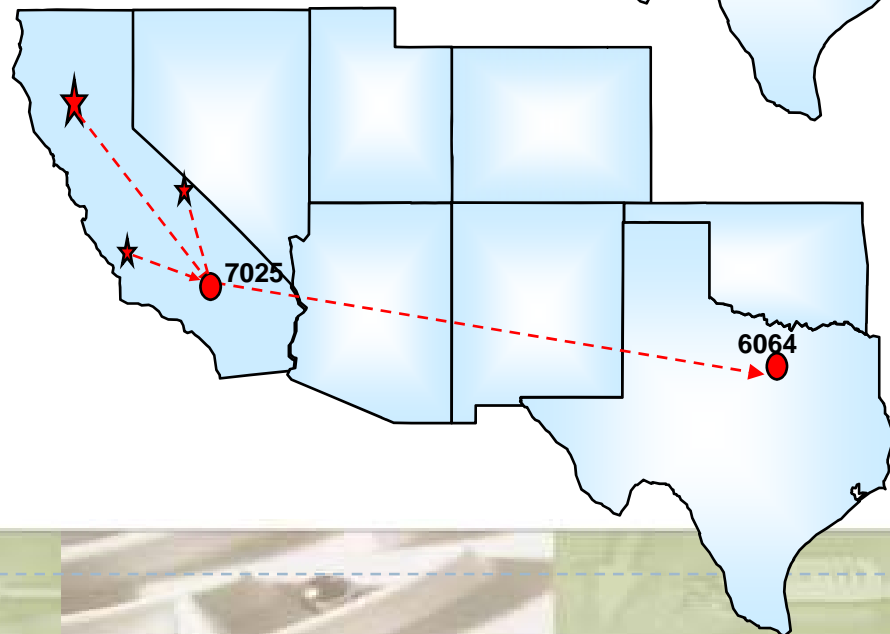
➤ Multi Stop Pickup Model

- Costly
- Slow
- Carrier/Driver Unfriendly



➤ New Model

- Cost Effective
- Faster
- Visibility of Cold Chain



Keeping it Fresh/Cold During Transit

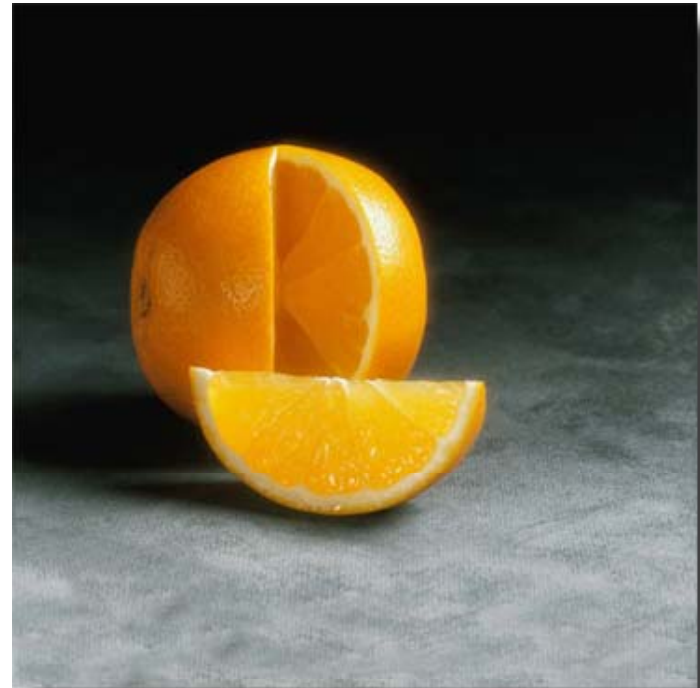
Quality Control and Tracking Using EPC

- Serialized Identification
 - Track and Trace product through supply chain
 - Product dwell time
 - SMART Recalls
- Associated Batch/Lot and Expiration date
 - Ensuring proper rotation
 - Identify out-of-date product



Future Freshness Monitoring

- **Sensor Tags can Monitor**
 - Temperature
 - Humidity
 - Chemicals in the air



Keeping it cold during transit

➤ Remote/Wireless monitoring

- Zone Temp
- Open Doors
- Fuel Level

➤ Yard Management

- Turn unit on/off
- Run diagnostic tests
- Monitor Fuel
- Zone temps



“The Future is Fresh”



Total Supply Chain Visibility





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